CERES Data Management System

Items for Discussion - September, 1997

Schedule

Working Group Status

Release 2 Development and preparations for TRMM

Current Release 2 Issues

Near-term Plans

Contributions to this report from:

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Significant events since last Science Team Meeting

Release 2 Data Management System deliveries to the DAAC are proceeding on schedule

Six of 12 Subsystems have been delivered for the November 1997 TRMM launch

TRMM Mission Simulations and 30-day test resolved many technical and interface issues

Working closely with LaRC TRMM Information System (LaTIS) development at DAAC

'Emergency Backup' to ECS Release B planned as extension of LaTIS

ERBE scanner data reprocessing

- **Used CERES ERBE-like Subsystems to process 5+ years of ERBS and test months of NOAA-9**
- **Goal is consistent data set from ERBE to CERES**
- **Good test of CERES algorithms, software and procedures**

LANGLEY RESEARCH CENTER

APPROVAL: _____
J.F. Kibler

ACCOMPLISHMENT _____

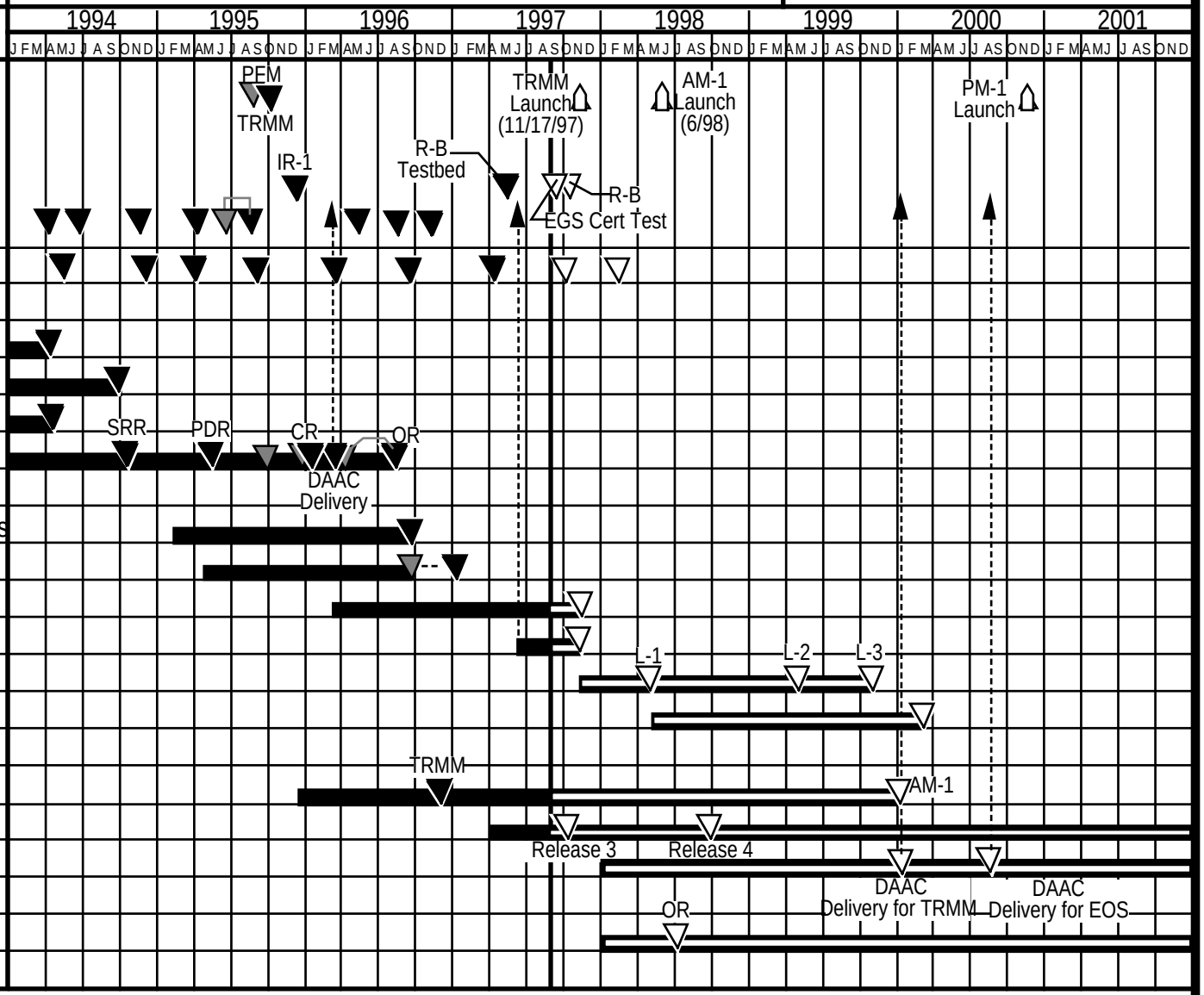
CERES
Data Management System Development

LEVEL

ORIGINAL SCHEDULE APPROVAL 10/8/92

LAST SCHEDULE CHANGE 2/7/97

STATUS AS OF 8/20/97



KEY:
CR: Code Reviews
ATBD: Algorithm Theoretical Basis Documents

Baseline

OR: Operations Reviews
SRR: Software Requirements Reviews
PDR: Preliminary Design Reviews
L - # : Level 1, 2, & 3 Data Products

8/26/97 8:26am

LANGLEY RESEARCH CENTER

APPROVAL: _____
J.F. Kibler

ACCOMPLISHMENT _____

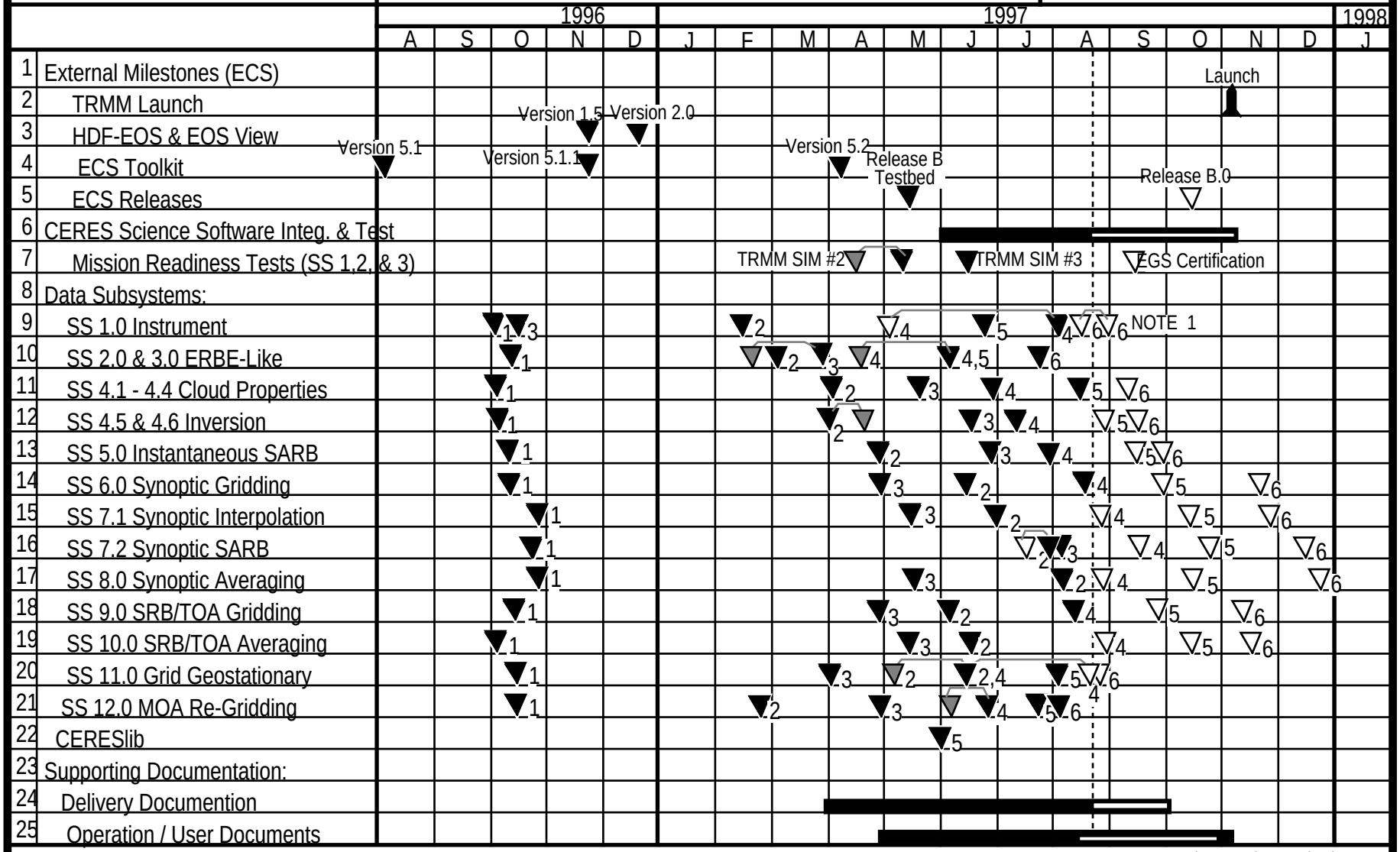
CERES
Release 2 Data Management System Development and Testing

LEVEL

ORIGINAL SCHEDULE APPROVAL 6/26/96

LAST SCHEDULE CHANGE 6/25/97

STATUS AS OF 8/20/97



Note 1: SS 1.0 Production-Level Stress Test delayed for new delivery to include new radiance conversion, new output products, and new QC reports.

Release 2 Milestones

Baseline

1. Data Product Catalog Itemization
2. SCF Integration and Test
3. Algorithm Freeze Date
4. Working Group Acceptance/Verification
5. DAAC Delivery Date
6. DAAC Production - Level Stress Test

8/26/97 8:30am

TRMM Mission Simulations

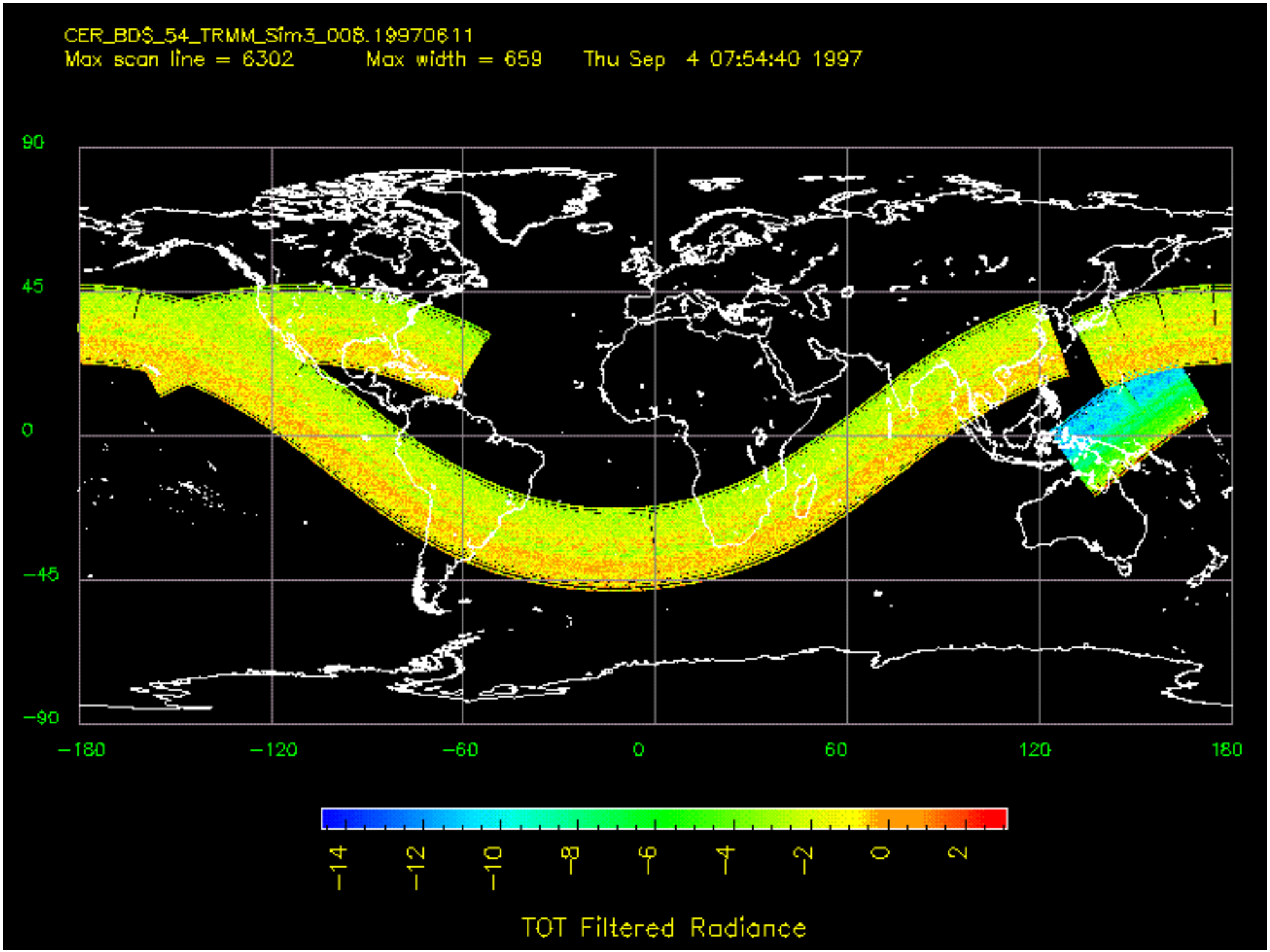
CERES and DAAC teams at Langley and TRMM and EOSDIS teams at GSFC conducted two more end-to-end simulations: Sim #2 (5/7-9/97), Sim #3 (6/11-13/97)

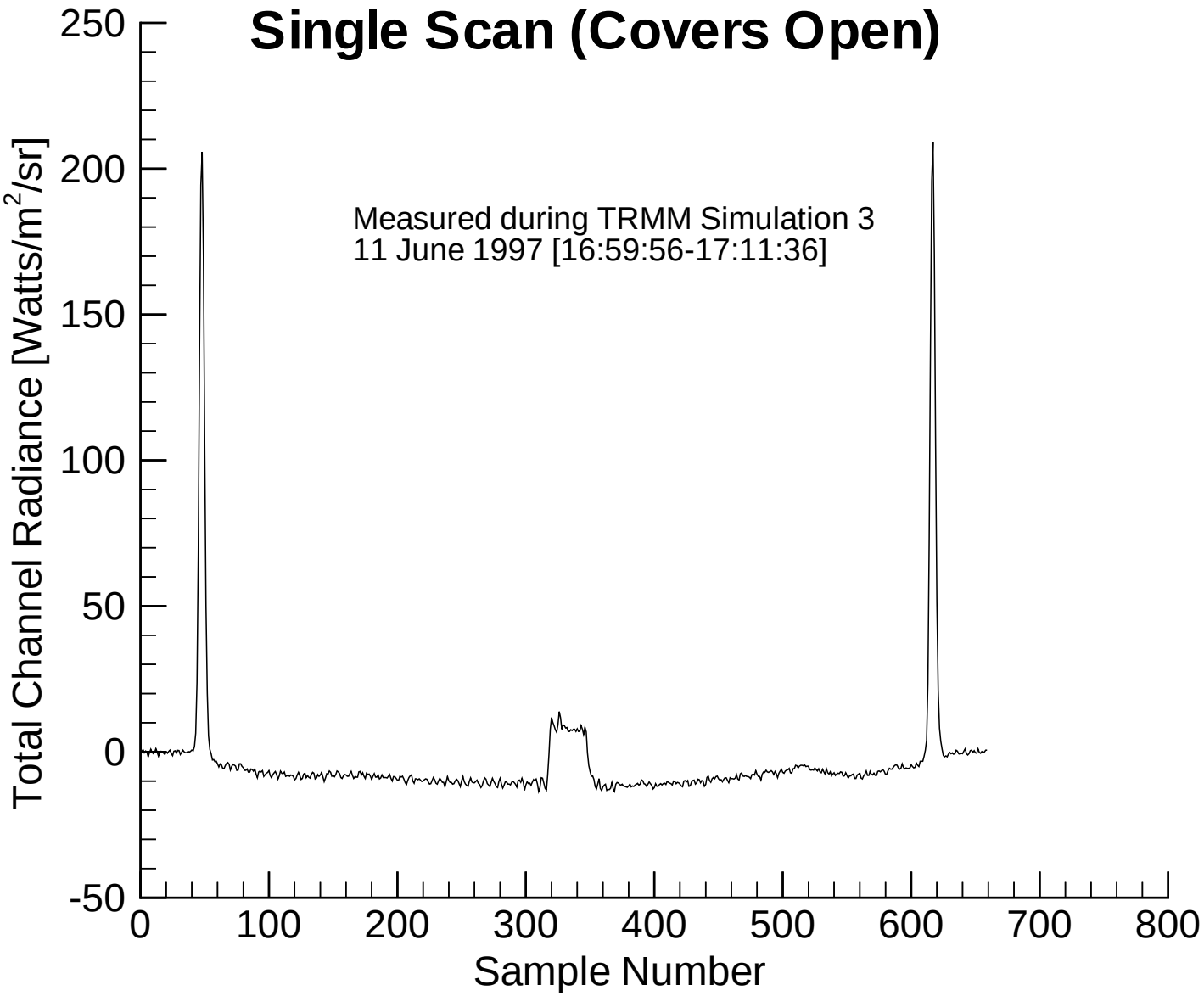
- **The TRMM satellite and instruments (located at the GSFC Integration and Test Facility) were commanded through almost all operational modes from the TRMM Mission Operations Center (MOC) using TDRSS links.**
- **Both real-time housekeeping and science telemetry data from CERES were transmitted from the TRMM satellite through TDRSS to the PACOR Level 0 processing facility at GSFC.**
- **Real-time displays and data files from the MOC were transmitted through secure NASCOM lines to the CERES Instrument Support Workstation in ASD. The capability to broadcast through the LaRC television network for remote monitoring by LaRC CERES personnel was demonstrated during SIM #2, but the resolution was marginal.**
- **After initial processing at PACOR, the Level 0 science data stream was transmitted to the LaRC DAAC, both as quick-look and 24-hour data files, and captured using EOSDIS ingest system.**
- **Science Data was processed at the DAAC by DAAC personnel in a realistic scenario.**
- **Level 1 products showed an intermittent problem with the elevation gimbal. This error was found to be a timing update problem and was corrected after Sim #3 with a memory patch.**
- **CERES main covers were opened during the first day of Sim #3. Data from this time allowed a better characterization of the elevation angle offset.**
- **Extremely useful simulations for operations, processing interfaces and algorithm testing.**

Now conducting a 30-day test (8/18-9/18) using replay data from the simulations.

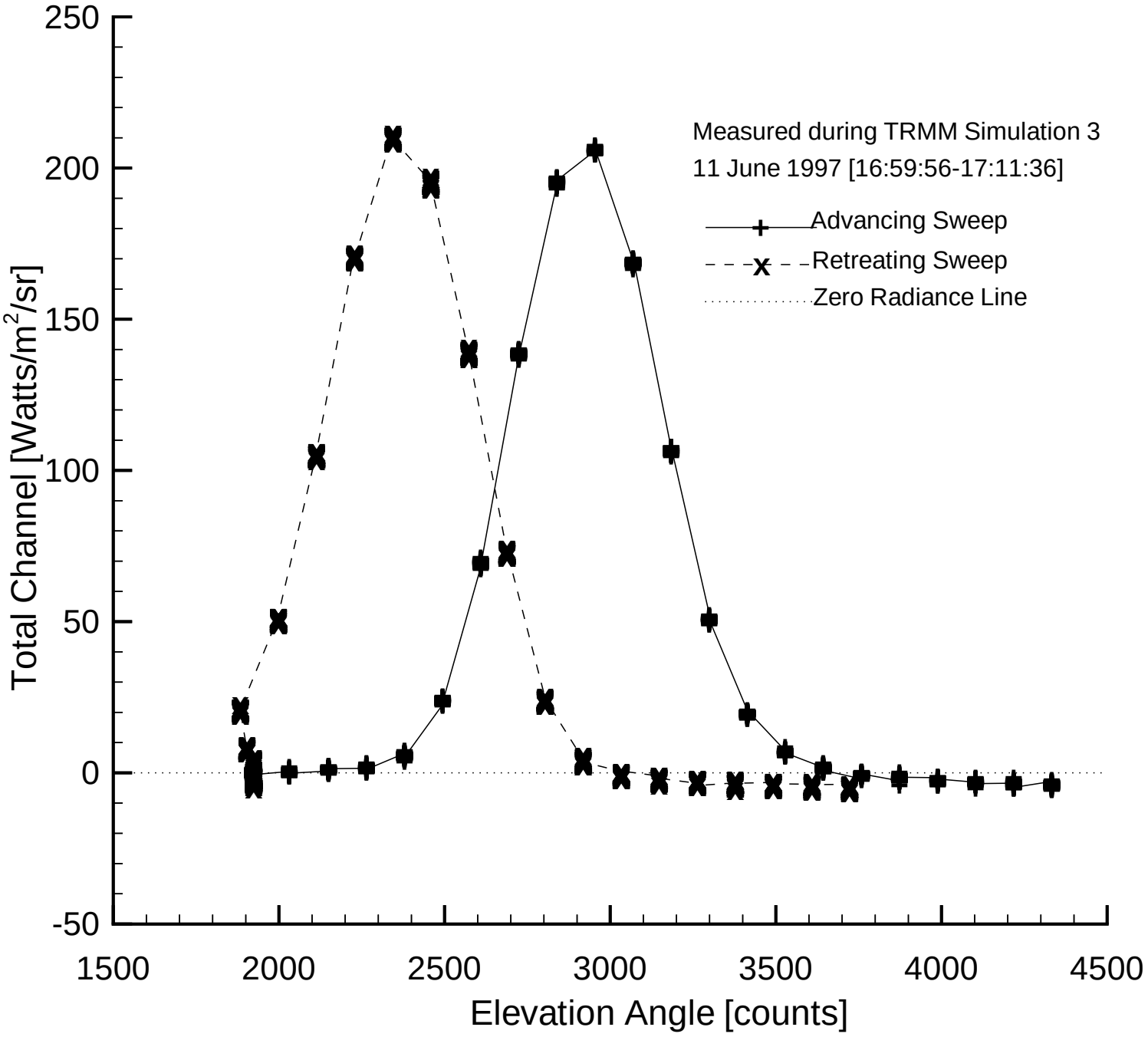
- **Level 0 instrument and ephemeris data files transmitted from PACOR to DAAC**
- **Producing Level 1 science products from Instrument Subsystem**
- **Realistic test of network and processing loads**

TRMM Sim #3 - Processed within hours of data acquisition




Single Scan (Covers Open)
Measured during TRMM Simulation 3
11 June 1997 [16:59:56-17:11:36]
Total Channel Radiance [Watts/m2/sr]
Sample Number
250
200
150
100
50
0
-50
0
100
200
300
400
500
600
700
800

Measured Radiance - Total Channel



External Interfaces and Mission Operations

Responsible for:

- **Negotiations with GSFC, EOS, and TRMM Projects**
- **Coordination with Langley CERES Project Office and TRW**
- **TRMM and EOS Instrument monitoring, real-time displays, instrument health and status**
- **Software to distribute/analyze housekeeping data from TRMM ISW to LaRC workstations**

TRMM:

- **Participated in TRMM Mission Simulation #2 (5/7-9/97), Simulation #3 (6/11-13/97), and the 30-day test (8/18-9/18).**
- **Monitored selected real-time passes to test communication links and displays.**
  - **LaRC electronically submitted microprocessor loads to the TRMM MOC.**
  - **Identified items to be corrected at TRMM MOC prior to launch.**
- **Participated in end-to-end test for real-time data interfaces held August 26-28, 1997.**
- **Upgraded TRMM Instrument Support Workstation hardware and operating system.**

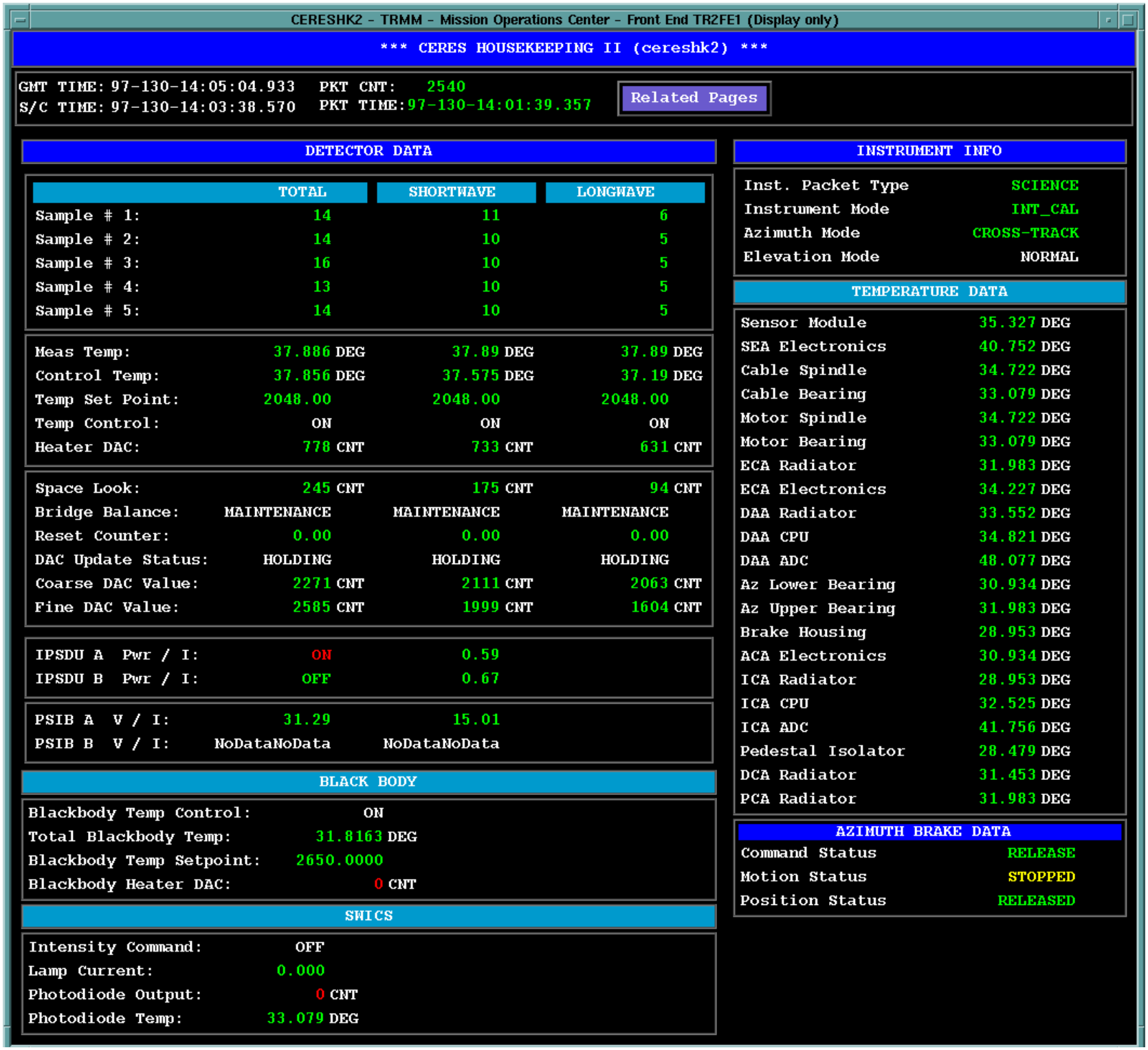
EOS-AM:

- **Participated in EOS-AM Operations Review May 28-29, 1997.**
- **Participated in CERES Operations meeting August 13-14, 1997.**
  - **Preparing for upcoming simulations and interface tests.**
  - **Release B of Instrument Support Terminal will be delivered in October, 1997.**

Near-term Plans:

- **Continue to work flight operations details with TRMM and EOS-AM personnel.**

Real-time display captured on Langley ISW from TRMM simulation



CERES Instrument Simulator

Flight processor simulation for validation of re-programming and in-flight anomaly investigation

TRMM version of Simulator:

- **TRW / GSE BCU software provides housekeeping and science data displays of simulator ICP and DAP status on host PC**
- **Instrument Monitor functions in realtime or playback mode**
- **Matlab / Simulink linear and non-linear models ready**
- **Realtime executable files being used for elevation and azimuth port interface**
- **Telemetry memory upload capability demonstrated**
- **100 Meg " Zip" drive ready for CCSDS (.fio format) file storage of simulation records**

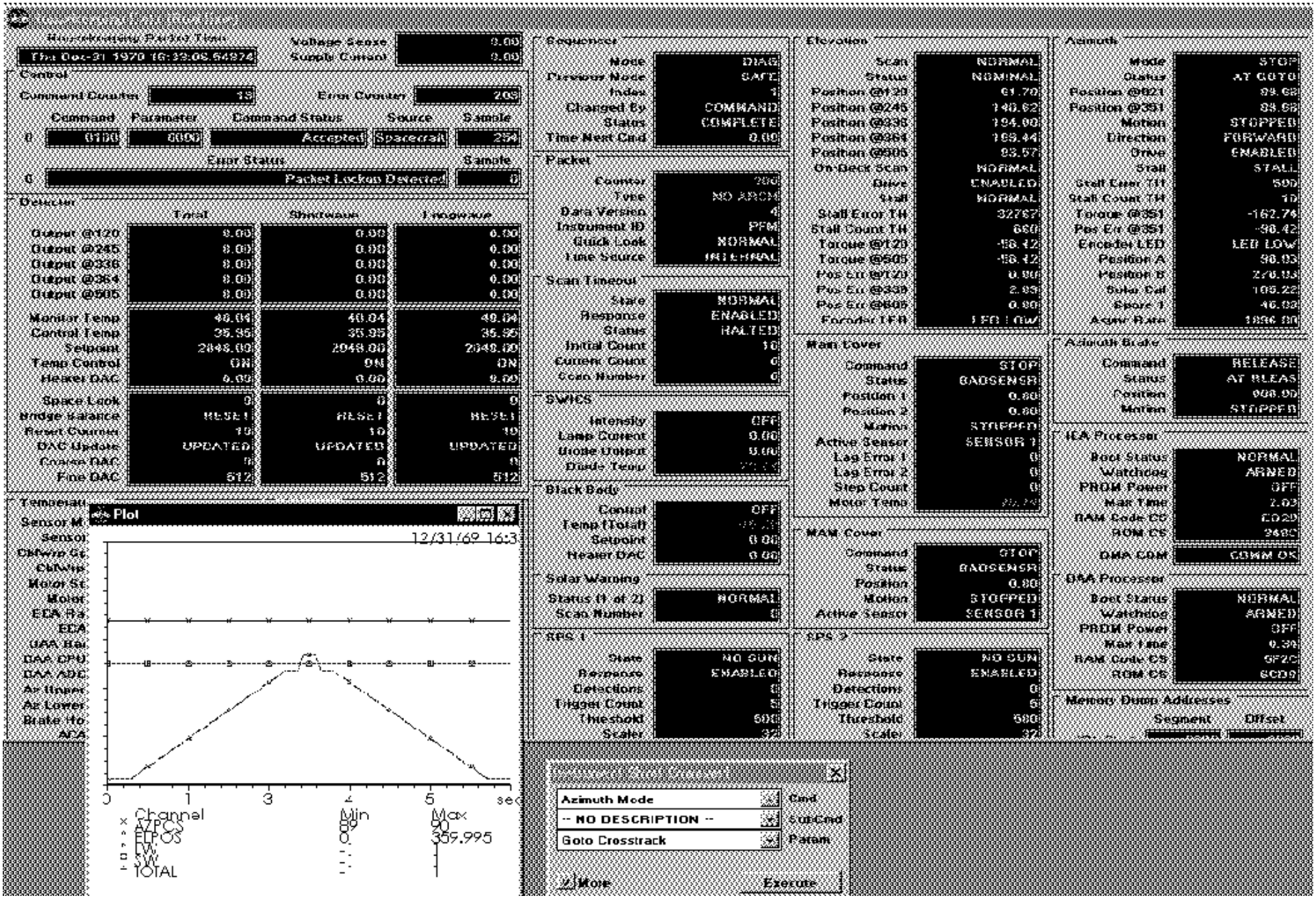
Current Status:

- **Unmodified TRW flight code executes on ICP and DAP logged by logic analyzer**
- **Host-PC software: Interrupt driven interface succesfully links gimbal models to ICP & DAP**
- **Host-PC cards: I/O card buffered interface functional with CERES processor El & Az ports**

Near-term Plans:

- **TRMM:**
  - **Developing interactive sensor I/O for ICP & DAP controlled parameters (e.g. Az brake)**
  - **Package cards and interface components into enclosure**
- **EOS-AM:**
  - **Simulator cards now in Fabrication Shop**
  - **Building spacecraft-unique cards for ICP, DAP, Spacecraft Interface, Digital I/O**

BCU Screen showing Normal Earth Scan from CERES Simulator



Working Group: Instrument

Responsible for:

- **Subsystem 1 (Instrument Geolocate and Calibrate Earth Radiances)**

Data Products:

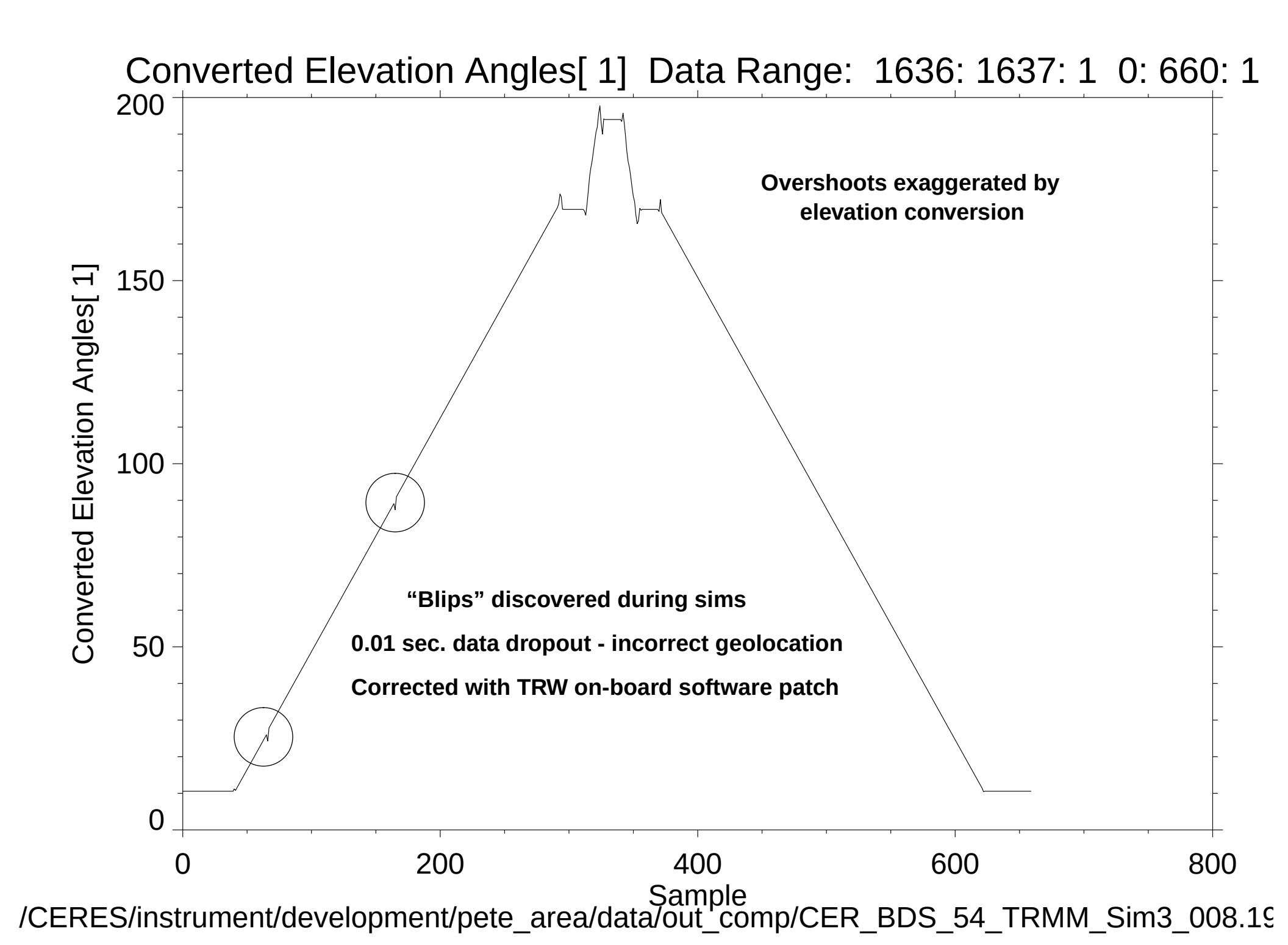
- **BDS (Bi-Directional Scan)**
- **IES (Instrument Earth Scan)**

Current Status:

- **Release 2 system architecture implemented; testing and verification underway**
- **Additional system QC and analysis reports being designed and implemented**
- **Processed data from TRMM Simulation #2 (6/97), #3 (7/97), and 30-day (8/18-9/18/97)**
  - Subsystem delivered to the DAAC and run by DAAC personnel
- **Developing graphical analysis tools using IDL**
- **Re-delivered Subsystem code updates to DAAC during 2nd week of TRMM 30-day test to exercise SSI&T during normal operations**

Near-term Plans:

- **Continue verification of system functionality and output products**
- **Support DAAC during the TRMM 30-day test**
- **Complete metadata to be compliant with new Toolkit version**
- **Deliver flight ready system to DAAC for TRMM launch**
- **Prepare to analyze IES and BDS during early-orbit check-out after TRMM launch**
- **Implement support for EOS platforms**


Converted Elevation Angles[1] Data Range: 1636: 1637: 1 0: 660: 1
Converted Elevation Angles[1]
200
150
100
50
0
0
200
400
600
800
Sample
Overshoots exaggerated by
elevation conversion
“Blips” discovered during sims
0.01 sec. data dropout - incorrect geolocation
Corrected with TRW on-board software patch
/CERES/instrument/development/pete_area/data/out_comp/CER_BDS_54_TRMM_Sim3_008.19

Working Group: ERBE-like

Responsible for:

- **Subsystem 2 (ERBE-like Inversion to Instantaneous TOA Fluxes)**
- **Subsystem 3 (ERBE-like Averaging to Monthly TOA Fluxes)**

Data Products:

- **ES-8 (Equivalent to ERBE Instantaneous TOA Estimates)**
- **ES-9 (Monthly Averaged Regional Parameters)**
- **ES-4, ES-4G (Monthly Averaged Regional, Zonal, Global Parameters by region and gridded)**
- **Scene ID Ancillary Input Data, Spectral Correction Ancillary Input Data**
- **Solar Declination values for each year, Albedo Directional Model values**
- **ES-8 and ES-4 Browse Products**

Current Status:

- **ES-8 includes all 660 measurements per record, not just the 450 Earth-viewing measurements.**
- **New radiance pair SW and LW ADMs (includes colatitudinal and seasonal dependency)**
- **Began ERBE Scanner Data Reprocessing at the DAAC**
  - **New snow maps (northern hemisphere is from original ERBE and southern hemisphere is from SMMR & SSM/I data sets)**
  - **New NOAA-9 offsets to address the 2% SW channel (calibration) problem**
  - **New monthly spectral correction coefficients to address the 1% ERBS drift problem**
  - **New tropical constant and 3-channel intercomparison algorithms added to QC report**
  - **New directional models**
  - **Added scripts to generate ES-8 and ES-4 browse images available on the Web**
  - **Can now process one year of ERBE data in less than one day**

Near-term Plans:

- **Complete the ERBE Scanner Data Reprocessing.**
- **Support the TRMM “30-day test” based on Sim #3 data.**
- **Complete implementation of metadata into all products in HDF format.**
- **Provide final software to the Langley DAAC for TRMM processing.**

QC plots available on web as ERBE-like processing is completed

Netscape: ERBE Reprocessing Data Validation

File Edit View Go Bookmarks Options Directory Window Help

Back Forward Home Reload Images Open Print Find Stop

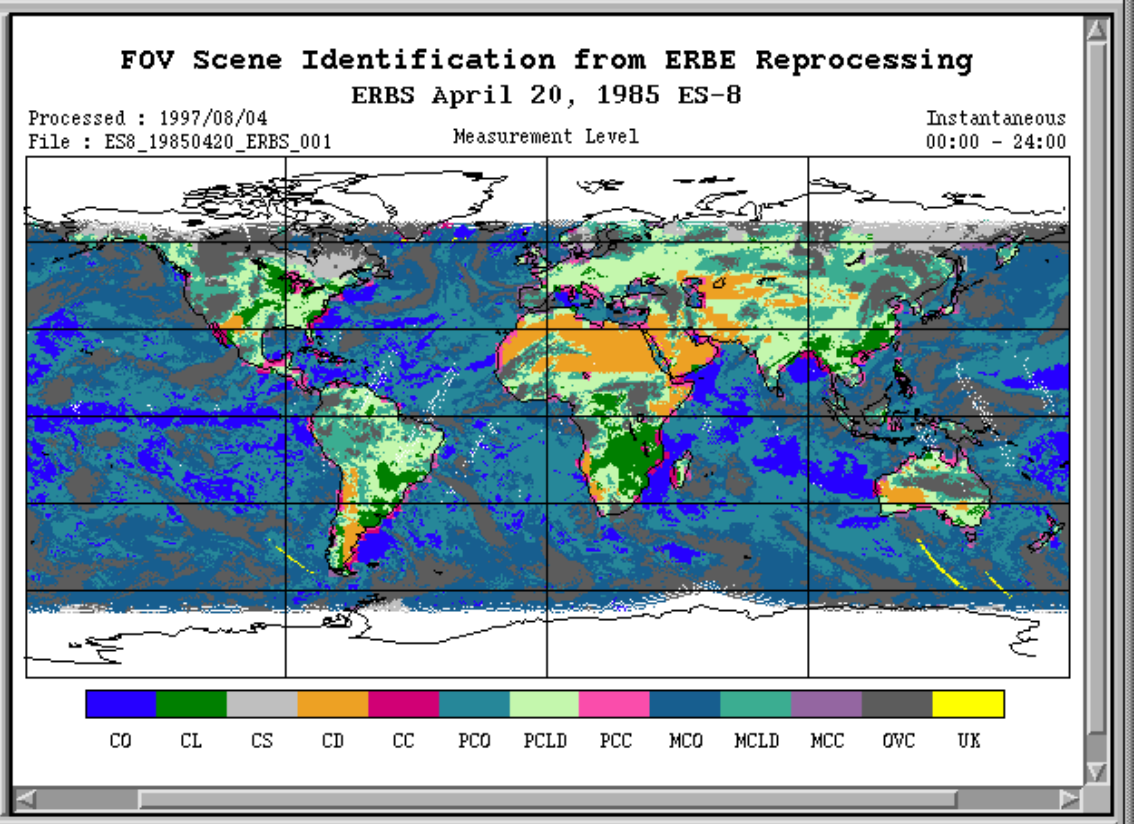
Location: http://lposun/~dms/erbe_repro/HTML/erdval_top.html

What's New? What's Cool? Destinations Net Search People Software

ERBE-like Data Validation
for ERBE Reprocessing
ES-8

Year:	1985
Month:	Apr
Day:	20
Instrument:	NOAA-9 ERBS NOAA-10
Parameter:	SW Unfiltered Radiance LW Unfiltered Radiance SW TOA Flux LW TOA Flux FOV Scene ID

Show Plot



ERBE-like Home Page | ES-4 | ES-8 | Snow | QCplot | Help

Working Group: Clouds

Responsible for:

- **Subsystem 4.1 - 4.3 (Clear/Cloud Detection, Cloud Layers, Optical Properties)**
- **Subsystem 4.4 (Convolution with CERES Footprint)**

Data Products:

- **SURFMAP (Surface Map and Properties)**
- **VIRS & MODIS & AVHRR (Cloud Imager Data)**
- **CRH (Clear Reflectance/Temperature History)**
- **CookieDough, CloudVis**
- **Intermediate SSF (Single Satellite Footprint - Cloud Properties)**

Current Status:

- **F90 production code running on SCF SGI in 64-bit mode, Irix 6.4 using Toolkit, HDF, Cereslib**
- **Initial version of Release 2 code delivered to DAAC on schedule**
- **Updates and new algorithms integrated when received from the Science Team**
- **All science algorithms are compliant with VIRS imager channel structure**
- **Working with contributors to adjust algorithms to accommodate 1.6 μm channel. Currently, only Stowe's AOT algorithm makes use of additional channel.**
- **Processed simulated VIRS data from TRMM Sims #1, #2, and #3 through 4.1 - 4.4**

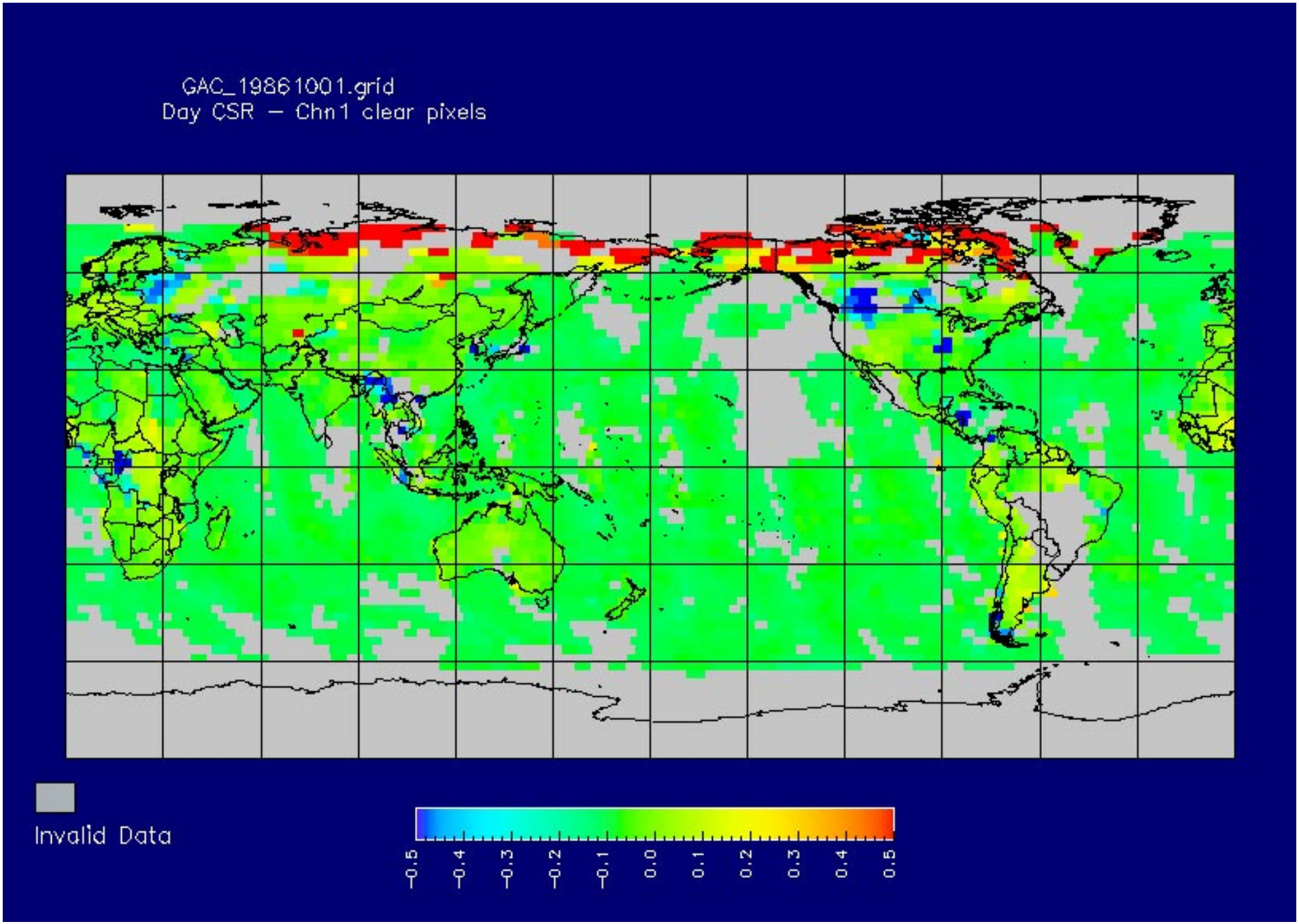
Near-term Plans:

- **Prepare a pre-launch delta delivery to incorporate the latest versions of algorithms, additional metadata, and Toolkit 5.2**
- **Complete modifications to the QC modules for 4.1-4.3 and develop analysis tools**

Regional Reflectance (0.63 micron) for Clear Pixels

Retrieved Clear Reflectance History Value - Observed Value

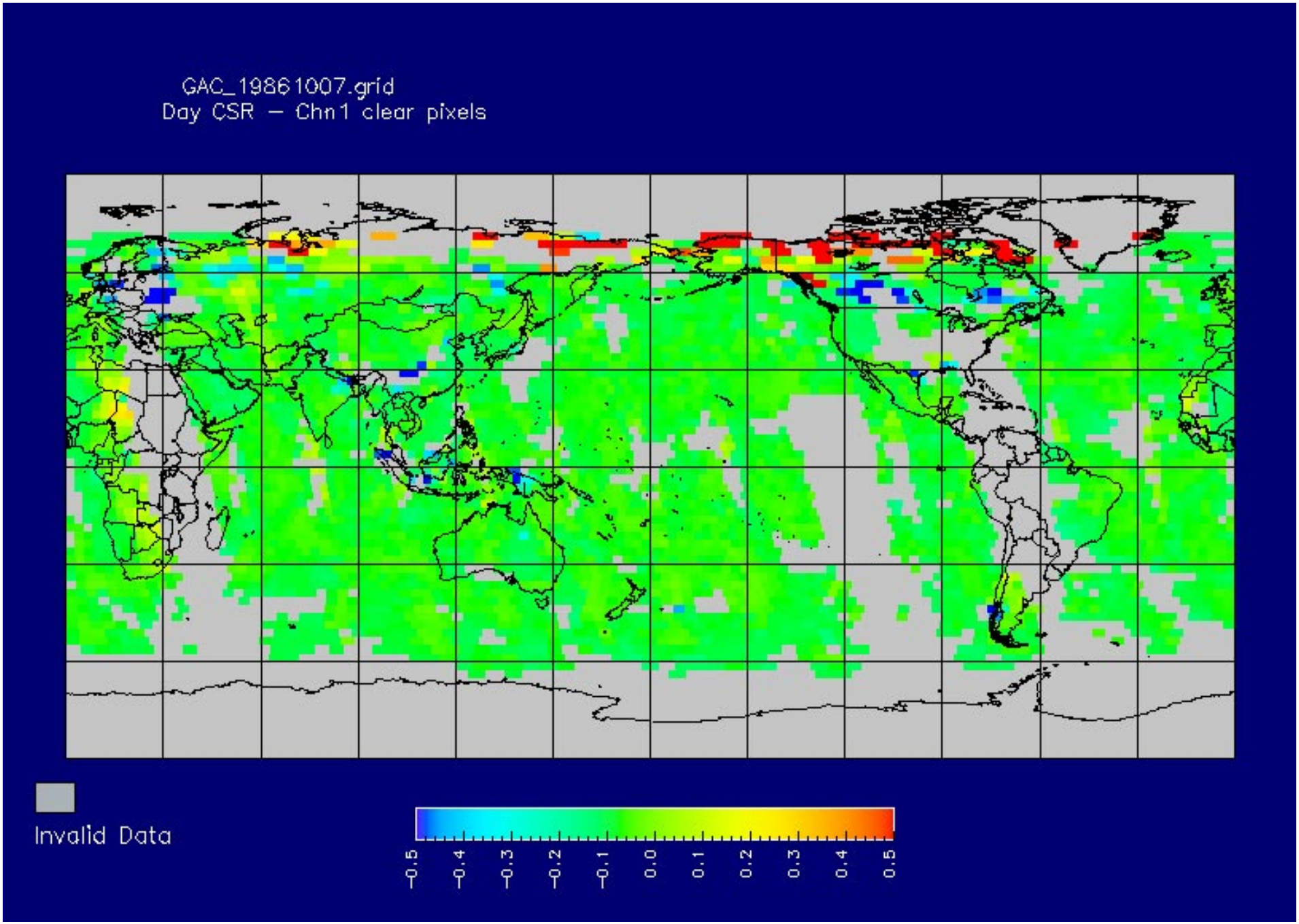
October 1, 1986 **Global absolute difference = 0.044**



Regional Reflectance (0.63 micron) for Clear Pixels

Retrieved Clear Reflectance History Value - Observed Value

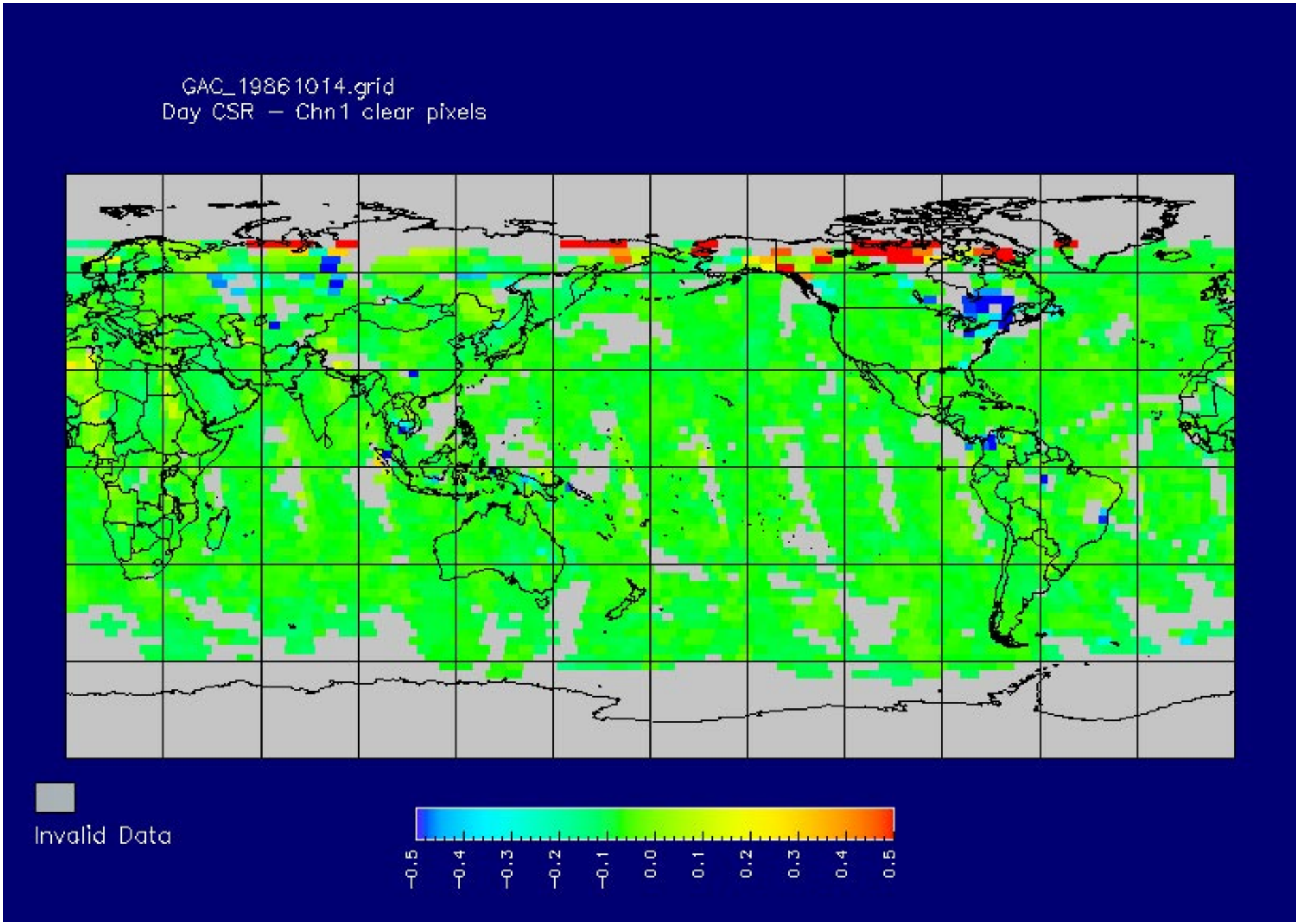
October 7, 1986 **Global absolute difference = 0.026**



Regional Reflectance (0.63 micron) for Clear Pixels

Retrieved Clear Reflectance History Value - Observed Value

October 14, 1986 **Global absolute difference = 0.018**



Working Group: Inversion and Surface Estimation

Responsible for:

- **Subsystem 4.5 (CERES Inversion to Instantaneous TOA Fluxes)**
- **Subsystem 4.6 (Estimate Longwave and Shortwave Surface Radiation Budget)**

Data Product:

- **Archival SSF (Single Satellite Footprint, TOA and Surface Flux, Clouds)**

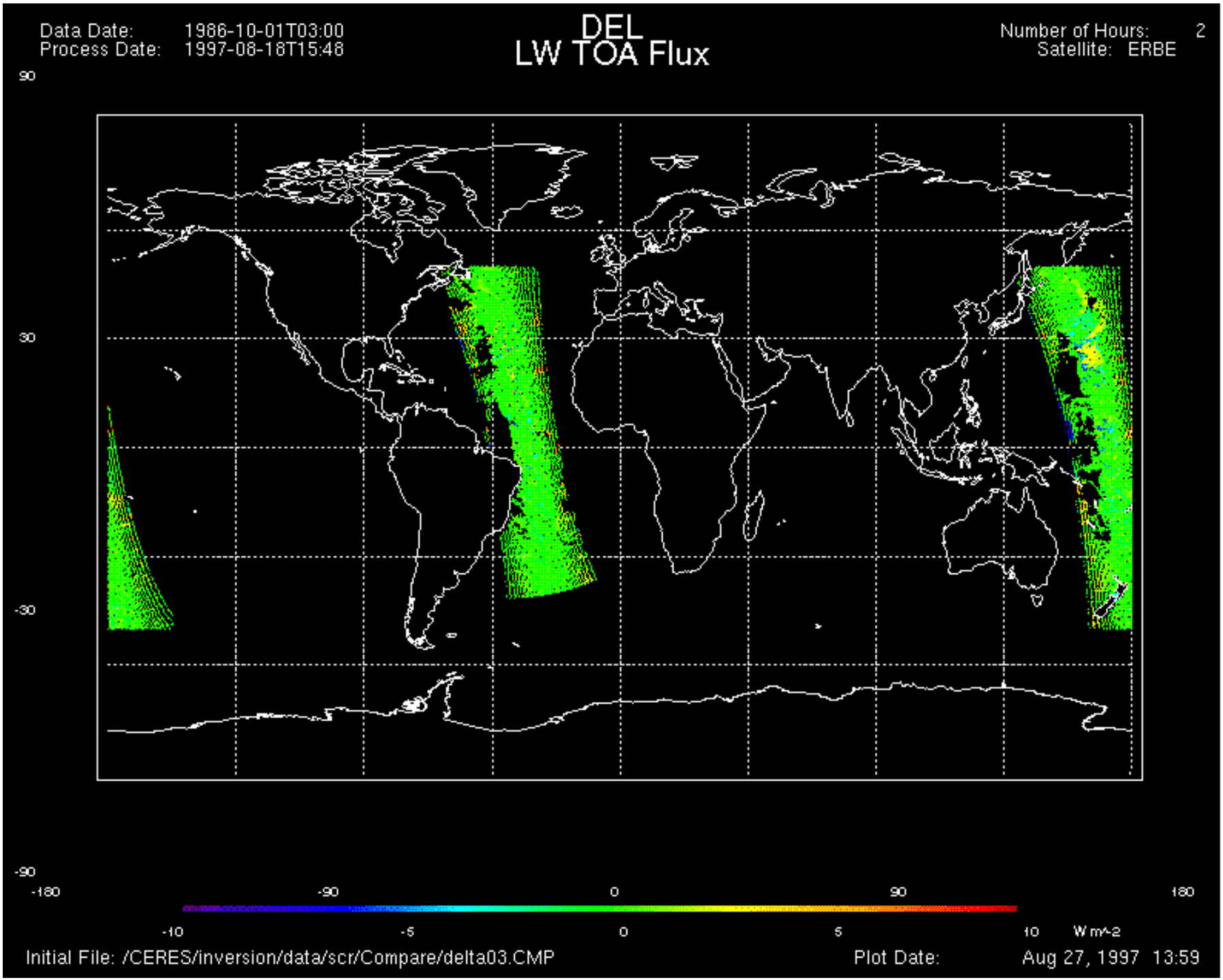
Current Status:

- **Binary QC file defined and implemented**
- **Release 2 software delivered to DAAC**
- **Product specific metadata defined**
- **Comparing SSF fluxes with ES-8 fluxes given ERBE/AVHRR input**

Near-term Plans:

- **Update SSF data product to reflect known changes**
- **Update subsystem software to compute new SSF parameters**
- **Make all adjustments needed to run on LaTIS system**
- **Complete documentation required for TRMM launch**
- **Select post-processor to convert binary SSF to HDF for archival and distribution**

Comparison of ERBE-like ES8 with Inversion SSF using simulated CERES data



Working Group: SARB - Surface and Atmospheric Radiation Budget

Responsible for:

- **Subsystem 5.0 (Compute Surface and Atmospheric Fluxes)**
- **Subsystem 7.2 (Synoptic Flux Computation)**
- **Subsystem 12.0 (Regrid MOA)**

Data Products:

- **CRS (Single Satellite Footprint, and Radiative Fluxes and Clouds)**
- **SYN (Synoptic Radiative Fluxes and Clouds)**
- **MOA (Meteorological, Ozone, and Aerosol)**
- **MWH, APD, GAP, OPD External Ancillary Data Inputs**

Current Status:

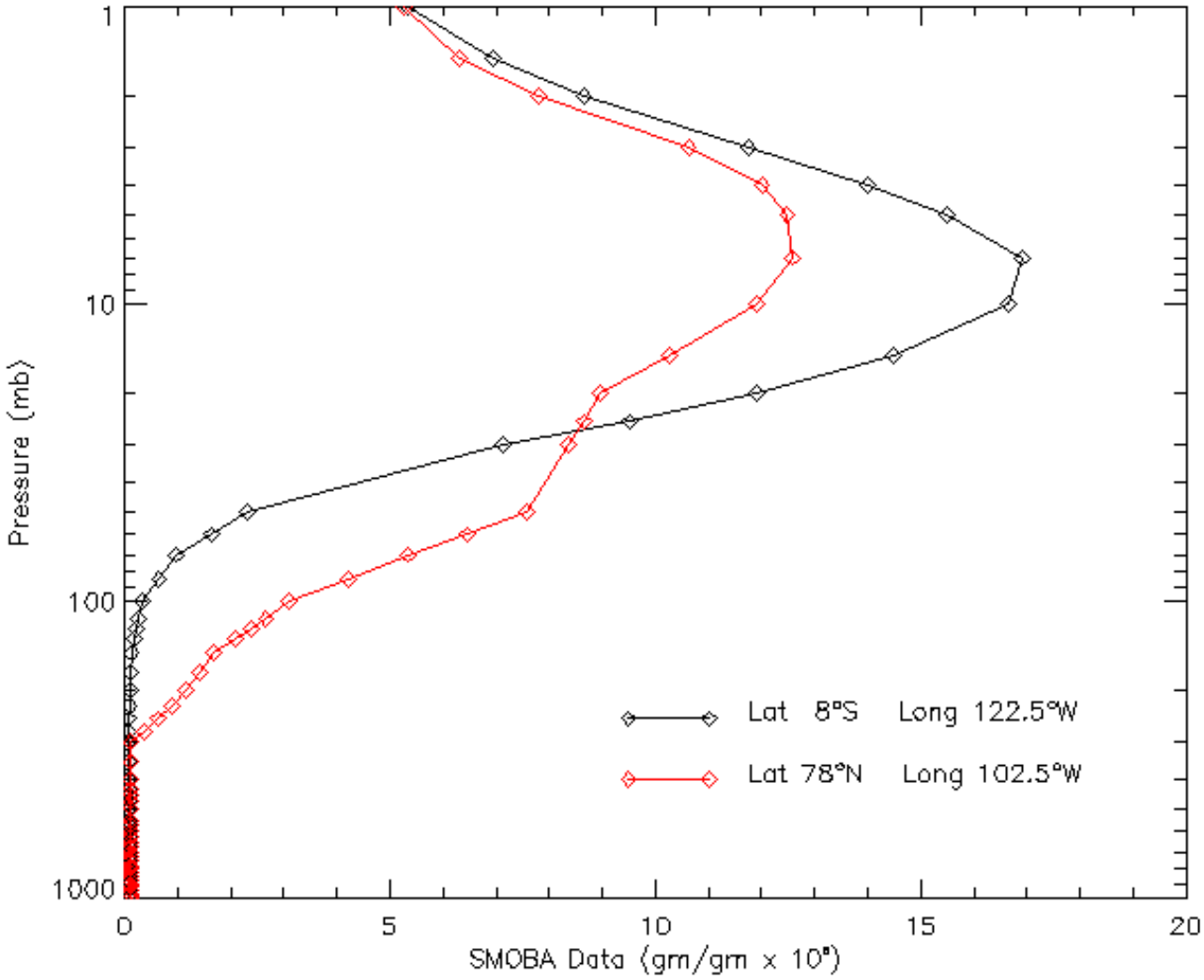
- **Subsystem 12.0 now reads and processes humidity data**
  - **SSM/I microwave provided by the Global Hydrology Resource Center (GHRC)**
  - **For large time gaps, backup based on NASA Water Vapor Project SSM/I-only climatology**
- **Subsystem 12.0 has been delivered to the Langley DAAC and successfully tested**
- **SMOBA ozone data incorporated into Subsystem 12.0**
- **Developing MOA graphics package to display global plot of any parameter from any MOA hour**
- **Subsystem 5.0 scheduled for DAAC delivery on September 12, 1997**
- **CKD longwave water vapor continuum added to version of Fu-Liou model used by Subsystems 5.0 and 7.2**

Near-term Plans:

- **Prepare parameter definitions for MOA, CRS, and SYN Users' Guides**
- **Deliver Subsystem 7.2 to the Langley DAAC, scheduled for October 24, 1997**

SMOBA Ozone Profile
(Interpolated to MOA Levels)

SMOBA Data Date: Apr 22, 1997



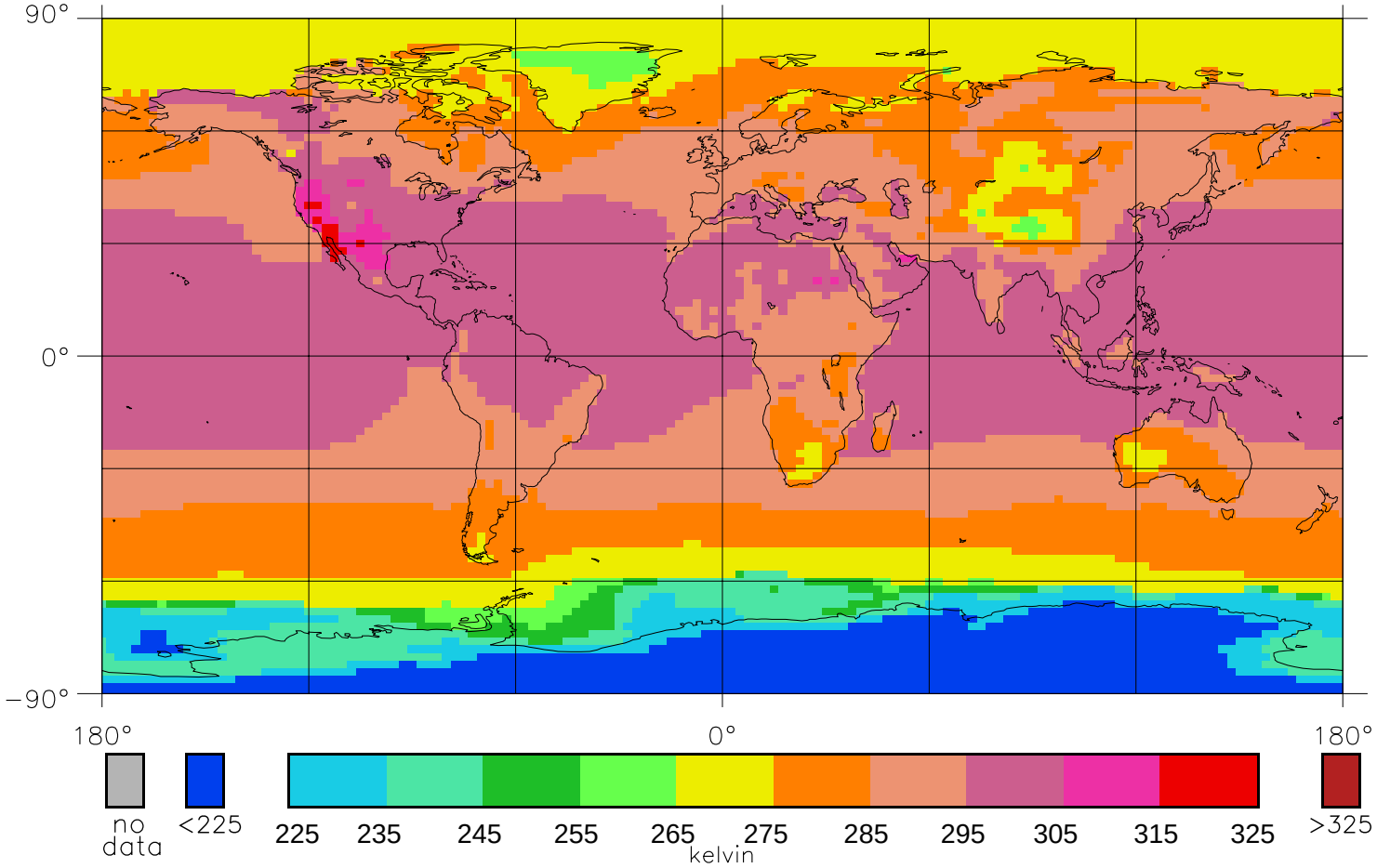
Plot Generation Date : Aug 21, 1997

Processing Date : Aug 18, 1997

MOA Data August 12, 1997

Surface Skin Temperature

DAO 2x2.5 degree grid



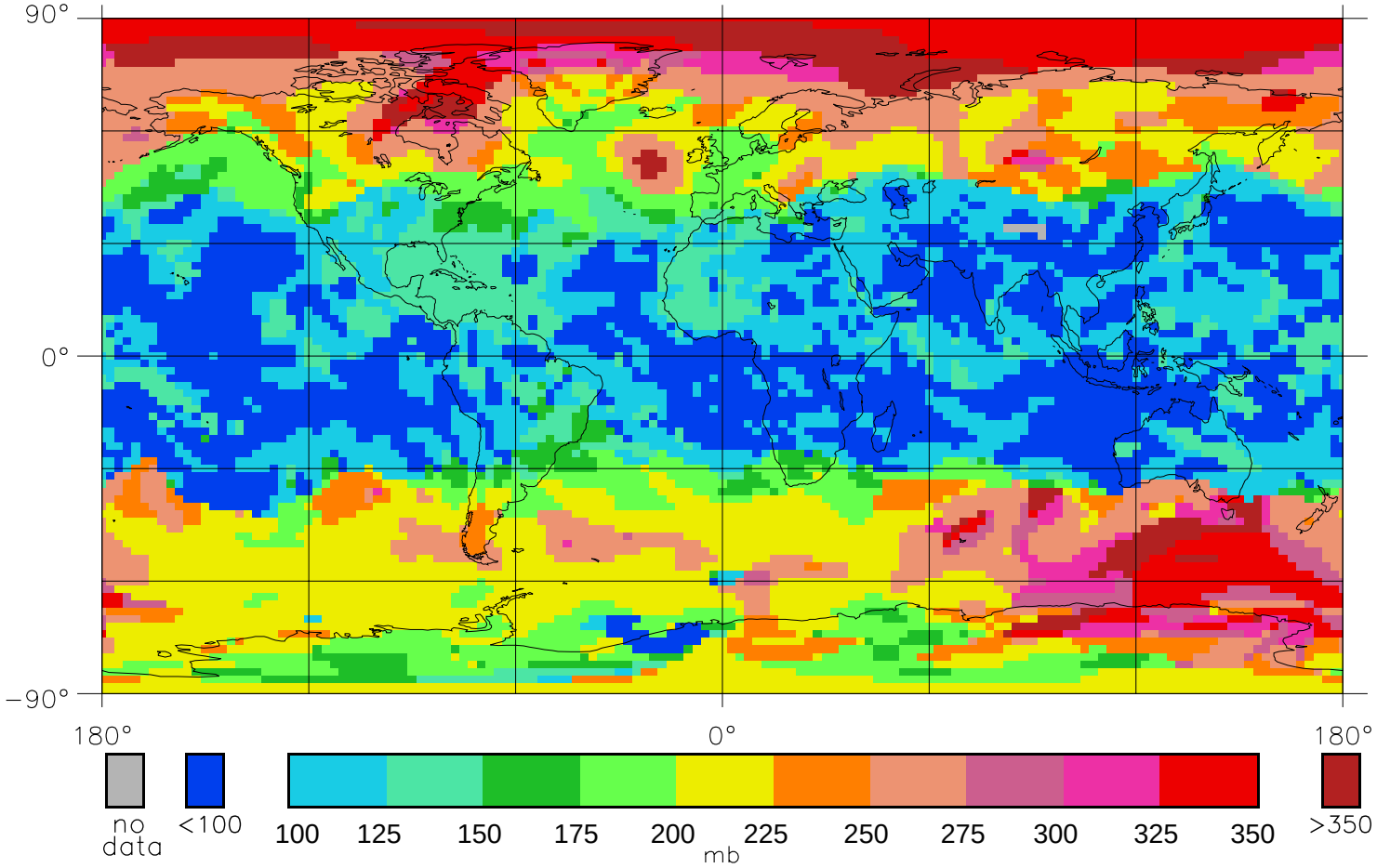
Max Value = 322.224
Min Value = 199.131

Plot Generation Date : Sep 4, 1997
Processing Date : Aug 18, 1997

MOA Data August 12, 1997

Tropopause Height

DAO 2x2.5 degree grid



Max Value = 402.328
Min Value = 75.0762

Plot Generation Date : Sep 4, 1997
Processing Date : Aug 18, 1997

Working Group: TISA - Time Interpolation and Spatial Averaging

Responsible for:

- **Subsystem 6 (Hourly Gridded Single Satellite Fluxes and Clouds)**
- **Subsystem 7.1 (Time Interpolation for Single and Multiple Satellites)**
- **Subsystem 8 (Compute Regional, Zonal and Global Averages)**
- **Subsystem 9 (Grid TOA and Surface Fluxes)**
- **Subsystem 10 (Compute Monthly and Regional TOA and SRB Averages)**
- **Subsystem 11 (Grid Geostationary Narrowband Radiances)**

Data Products:

- **FSW - Hourly Gridded Single Satellite Fluxes and Clouds (Subsystem 6)**
- **SYN - Synoptic Radiative Fluxes and Clouds (Subsystem 7)**
- **AVG, ZAVG - Monthly Regional, Zonal and Global Radiative Fluxes and Clouds (Subsystem 8)**
- **SFC - Hourly Gridded Single Satellite TOA and Surface Fluxes (Subsystem 9)**
- **SRBAVG - Monthly Regional TOA and SRB Averages (Subsystem 10)**
- **GGEO - Ancillary Data Product: Gridded Geostationary Data (Subsystem 11)**

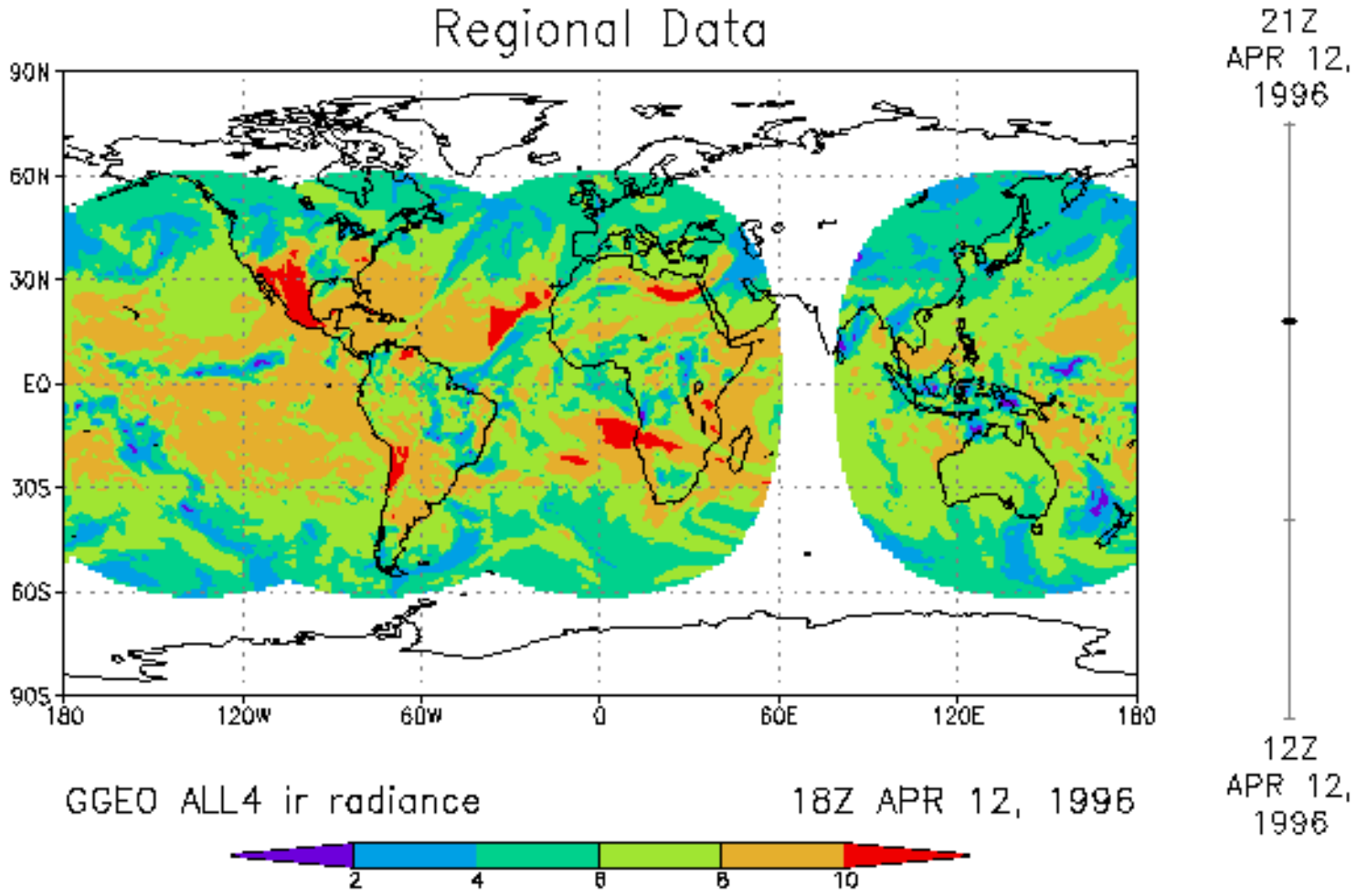
Current Status:

- **Release 2 deliveries to DAAC in progress, according to schedule**
- **Testing and Working Group Acceptance in progress**
- **Redesigned and rewrote Post MOA product to reduce storage requirements**
- **Incorporated all B1 contributed code, adding Toolkit compliance requirements and prologs**
- **Designing hour overlap and month overlap logic for Subsystem 9 (local hours)**

Near-Term Plans:

- **Complete Metadata Header records for all Output Products**
- **Need to define Directional Model requirements for spectral albedo and broadband surface albedo algorithms**
- **Enhance validation tools**
- **SSF changes (in September) will cause TISA modifications**
- **Continue Release 2 objectives: code refinements, corrections, and optimization; documentation**
- **Support operational requirements for LaTIS processing system**

CERES GGEO DATA DISPLAY SYSTEM



Validation and Visualization Aids

Develop tools for visualizing CERES data products to assist software development and support production processing and validation - understand the data and identify discrepancies

Features:

- **Interactive visualization and analysis**
- **Visualize CERES archival and validation data products**

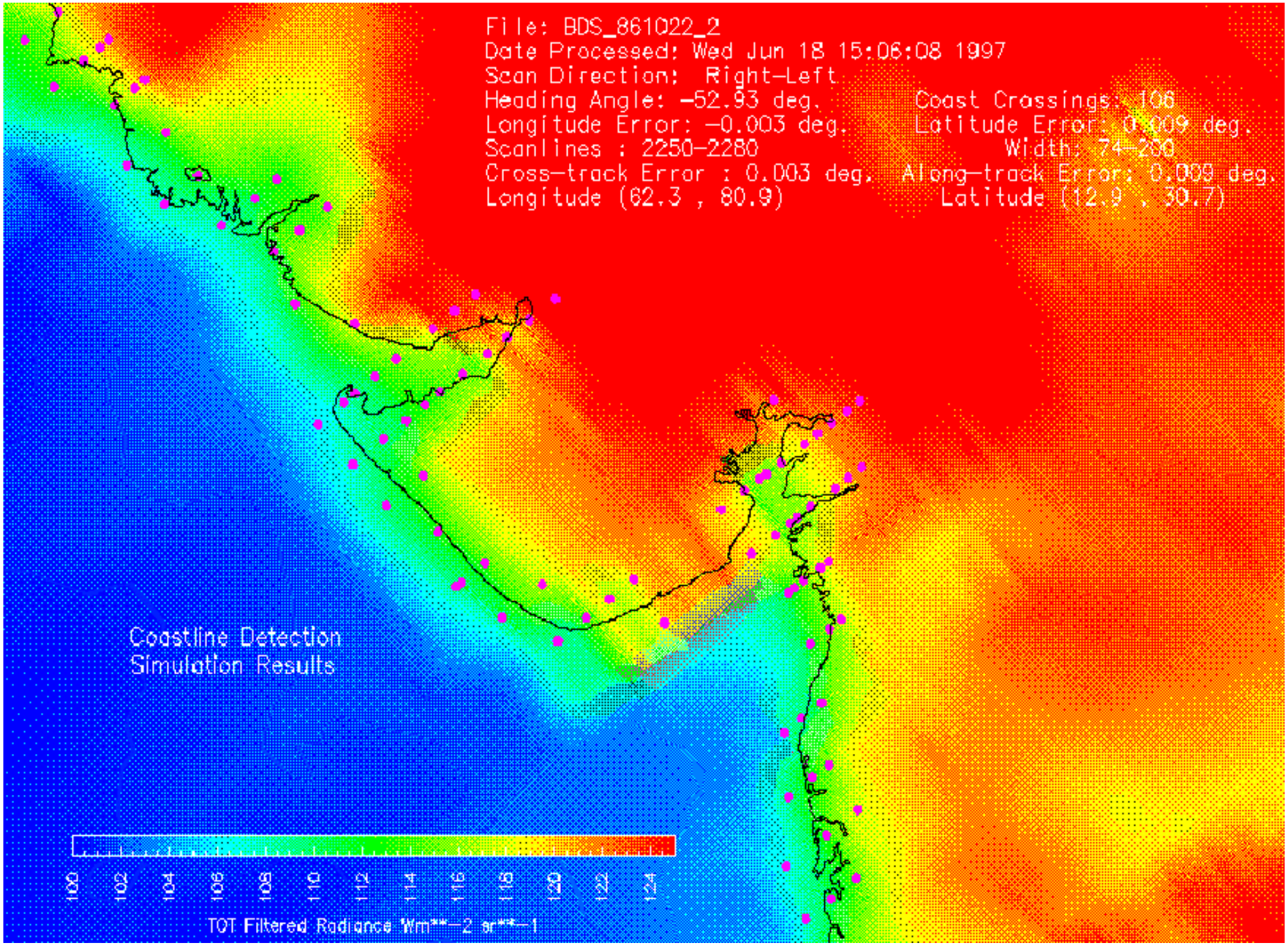
Current Status:

- **IBM Data Explorer (DX) programs for Earth-viewing measurements (IES, BDS, SSF, ES_8)**
- **IDL code for instrument analysis**
- **Coastline Detection Program for CERES geolocation accuracy assessment**
- **DX programs for CloudVis, Gridded Cloud, and CRH map**
- **IDL, DX, Linkwinds, and GrADS for gridded products**

Benefits and Findings:

- **Discovered elevation blip using DX on IES from end-to-end TRMM simulation tests**
- **Cloud WG using tools to verify cloud mask**
- **Production code validation for Instrument, ERBE-like, and Clouds**
- **Demonstrated interactive analyis of 24 hours of BDS data (~8.6 million points/parameter)**
- **Demonstrated power of embedding algorithms in an interactive environment**

Geolocation Validation - East coast of India using interpolated ERBE data



CERES System Engineering Committee

Charter: Coordinate solutions to issues which cross working group boundaries

Members: Maria Mitchum (DMO), Sandy Nolan (SAIC), Jill Travers (DAAC)

Items Resolved:

- **Release 2 SSI&T Delivery Schedule established; implementation underway and 'On Time'**
- **Established guidelines for Delivery Memo and Test Plan documents**
- **Determined baseline metadata for header records and archived output products**
- **Documented configuration management of software and data; linked between SCF and DAAC CM systems**
- **Established version number tracking for all internal and external library software packages**
- **Finalized file naming convention for all output products**
- **Held production rules meeting with software developers and ECS**
- **Established QA and QC software and report guidelines**

Current Issues:

- **Collect processing details for 42 processors**
- **Determine staging requirements for external ancillary data sets**
- **Document LaTIS Processing System Requirements for CERES TRMM including: Processing Requests, Process Staging, and Production Rules**
- **Negotiate Operations Agreement with LaRC DAAC for CERES TRMM processing**
- **Finalize exit code conditions**

Science Computing Facilities

New development, integration and testing server (lightning - configuration underway)

- **SGI Origin 2000 (IRIX 6.4) configured to match DAAC (LaTIS) as closely as possible**
- **16 R10000 processors**
- **358 GB of disk space (goal is to provide enough storage for 1 month of validation products)**

New visualization and validation server (asdsun - planned configuration)

- **Sun Enterprise 5000 currently with 4 167MHZ processors**
- **8 250MHZ processors are on order (existing 4 processors will be replaced)**

New test and integration subsystem server (blizzard - completed configuration)

- **SGI Deskside Challenge with 4 R10000 processors**
- **36 GB of disk space**
- **Future connection to optical jukebox**
- **Primarily used for testing compatibility and benchmarks of layered software with subsystem code, such as PGS Toolkit, CERESlib and new compilers**

EMASS tape library as a near line mass storage device (tape_archive - completed configuration)

On/Off-site LAN and WAN network upgrades (configuration underway)

- **FDDI interface operational between DAAC and ASD (currently improving transfer rates)**
- **FDDI link planned to cluster servers (thunder, lightning, asdsun) with near line storage device**
- **Switched Ethernet (10 Mbps) dedicated to the desktop at both facilities**
- **FDDI and Fast Ethernet (100 Mbps) to servers**
- **WAN to SAIC off site upgrade nearing completion. 10 Mbps WAN connection potential to increase to 100 Mbps**

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Release 2 PGE Size as Delivered to LaRC DAAC - 9/97

Working Group	SS	PGE	Delivery Date	Software, Bytes				Data, MB	
				Code	Scripts	SMF/ PCF	Misc	Input	Output
Instrument	1.0	Instrument	6/25/97	3188251	2751	73990	0	91.8	1161.4
ERBE-like	2.0 & 3.0	Daily and Monthly	6/13/97	4389136	41069	116441	22437	247.4	707.6
Clouds	4.1 & 4.4	Cloud Retrieval & Footprint Convolution	8/15/97	3626230	11367	82595	41677	311.5	651.5
Inversion	4.5	TOA/Surface Fluxes	8/22/97	249038	5168	22580	2941	49.4	3.1
SARB	5.0 7.2 12.0	Instantaneous SARB Synoptic SARB MOA Regridding	7/18/97	547949	735	27951	4113	708.5	319.3
TISA	6.0/6.1 7.1/8/10 7.1/10 9.0/9.1 11.0/11.1	Atmospheric Gridding Regional & Synoptic Avg Postprocess MOA Surface Gridding Grid Geostationary	8/1/97	611570	4952	31571	10800	34.7	573.5
System		CERESlib & Utilities	6/6/97	1390601	103227	16312	96082	0	0
System Total									

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PGE Software Size Comparison
From Release 1 in 9/96 to Release 2 in 9/97

Working Group	SS	Release 1 Software, Bytes				Release 2 Software, Bytes			
		Code	Scripts	SMF/ PCF	Misc	Code	Scripts	SMF/ PCF	Misc
Instrument	1.0	2333040	17459	79149	6062707	3188251	2751	73990	0
ERBE-like	2.0 & 3.0	1385374	93015	12082	40510	4389136	41069	116441	22437
Clouds	4.1 - 4.4	2656365	25880	28449	4594	3626230	11367	82595	41677
Inversion	4.5	137563	2123	4445	0	249038	5168	22580	2941
SARB	5.0 7.2 12.0	405208 413415 296283	1417 1644 4049	15173 18171 22497	29125 29752 22923	547949	735	27951	4113
TISA	6.0/6.1 7.1/8/10 7.1/10 9.0/9.1 11.0/11.1	(ss9) 699674 46121 475224 217806	(ss9) 2105 574 3828 1120	22241 51072 12136 21204 24776	0 337 540 0 0	611570	4952	31571	10800
System		739723	0	8061	2694	1390601	103227	16312	96082
System Total		9805696	153214	319456	6193182				
System Percent Increase/Decrease									

CERES Release 2 DAAC Performance Measurements - 9/2/97

One execution on LaTIS configuration of each PGE at production-level volume expected for TRMM launch.

SS	PGE	Compiler	Test Date	Time,sec			Block Operations		Peak Memory MB	Disk Storage, MB					Runs per Mnth
				Wall	User	System	Input	Output		Input	Temp	Interm	Arch	Logs	
1.0	Instrument	Ada	08/30	13952	13335	424	27397	7428	1320.3	106	0	303	387	0.9	31
2.0 3.0	Daily TOA Inversion Monthly Averaging	SGIF90 SGIF90	07/16 07/17	288 569	276 400	9 130	4334 4890	5 230	3.3 15.7	284 403	284 410	13 0	487 140	.02 1.7	31 1
4.1 4.4	Cloud Retrieval Footprint Convolution														
4.5	TOA/Surface Fluxes														
5.0 7.2 12.0	Instantaneous SARB Synoptic SARB MOA Regridding	NAG 32bit	08/08	1633	1548	29	35672	29	40.5	709	0	0	319	.001	31
11.0 11.1 9.0 9.1 12.1 10.0 6.0 6.1 7.1 8.0	Grid Geostationary Sort GGEO Surface Gridding Sort SFC Files Post-process MOA TOA/SRB Averaging Atmos. Gridding Sort FSW Files Synoptic Interpolate Synoptic Averaging														
System Total															

System total: multiply each PGE measure by the number of Runs per Data Month for that PGE, then add all PGE's. Some PGE's will require more resources for each instrument on EOS-AM and EOS-PM.

System-Wide Release 2 Issues

- **Continue identifying and incorporating changes driven by LaTIS**
- **Produce archival data products in Hierarchical Data Format (HDF)**
- **Include units for all parameters in the HDF products**
- **Finalize required metadata for every data product using CERESlib interface to LaTIS/ECS**
- **Use mandatory SDP Toolkit calls and test new Toolkit releases**
- **Produce realistic measurements of computer system resource requirements**
- **Complete QC reports: statistical summaries output from each PGE to convince us things are working or identify problems**
- **Update documentation**
  - **Data Products Catalog**
  - **Design Documents**
  - **Collection Guide Documents for archival data products**
- **Complete Release 2 DAAC delivery; begin redelivery for consistency in Toolkit, compilers, and metadata**
- **Continue improving DAAC delivery procedures to streamline the integration and testing for post-launch production processing.**

Concern: Differences between SCF, LaTIS, and ECS Release B are causing lots of wasted effort.

Release 2 Issues for Each Working Group

Instrument:

- **Complete validation tools such as software to derive offsets from pitchover maneuver**
- **Requirements for post processing reports**
- **Requirements for data analysis/subsetting tools**

ERBE-Like:

- **Final CERES spectral correction coefficients**
- **Need LW seasonal ADMs**
- **Complete ERBE Scanner Data Reprocessing**
- **Support the "30-day test" based on Sim 3 data.**

Clouds:

- **How frequently will CRH be updated? Currently, with the NOAA-9 AVHRR data, CRH is updated once a day. The orbital inclination of the TRMM spacecraft will necessitate a different update schedule.**
- **How will the dynamic snow and ice data sets be delivered, prepared, and used in the operational environment?**

Release 2 Issues for Each Working Group

Inversion/Surface Estimation:

- **Incorporate latest SSF data product and software changes**
- **Use latest CERES spectral correction coefficients**
- **Use newest ERBE ADMs**
- **Generate TRMM SSF in HDF using post-processor**
- **Write daily/hourly QC file readers for Inversion and Surface Estimation**

SARB:

- **Results are improved by sequential processing, but we need to run multiple hours simultaneously on different processors to complete 24 hours in one day. How to proceed?**

TISA:

- **SSF Output Product changes will require code modifications**
- **Continue validation requests from Science Team**
- **Finish hour overlap and month overlap logic for Gridding, SS9 (Local Hours)**

Near-Term Plans

- **Complete 30 Day Test processing through Instrument and ERBE-like subsystems**
- **Complete final algorithm and system wide updates, such as metadata and QC**
- **Complete Release 2 code deliveries to DAAC for LaTIS integration and test with one month of simulated CERES data prior to TRMM launch**
- **Maintain compatibility with ECS Release B for EOS-AM processing**
- **Begin On-line Collection Guide Documents which describe the archival science products**
- **Publish at-launch version of Data Products Catalog**
- **Begin validation using early-orbit maneuvers, calibrations, pitch-over, and Earth-viewing data**
- **May delay SARB and TISA subsystem deliveries to allow time for updated Instrument and ERBE-like deliveries prior to launch**

Where to from here?

- **Target dates for first sample Earth-viewing data products if all goes well**
  - **ERBE-reprocessed and ERBE-like: late January, 1998 (after pitchover analysis)**
  - **SSF: February, 1998 (after we get VIRS data)**
  - **SARB & TISA products: March (after we get a month through other subsystems)**

- **The DAAC will deliver the products you requested on the media you requested**
  - **Questionnaire discussed at last meeting**
  - **If you requested a standing order, no further action is required unless you want to change your requests**

- **To order products from the DAAC: http://eosweb.larc.nasa.gov/**
  - **Don't wait to the last minute to try this - some problems with firewalls...**

- **We will provide HDF-compatible read software**

- **You must download HDF libraries from NCSA for your machine**

- **We can help some with IDL & IBM Data Explorer modules for visualization if you need it**